

**WHAT IS CLAIMED IS:**

1. A high frequency optical pulse source using self-mode locking, the high frequency optical pulse source comprising, in one element, two distributed feedback (DFB) sections opposed to each other, and a phase control section  
5 between the two DFB sections,

the high frequency optical pulse source further comprising:

gratings formed inside the DFB sections and symmetrical to each other;

and

active layers of both DFB sections being associated with both sides of a  
10 waveguide core of the phase control section, thereby allowing Bragg wavelength detuning of both DFB sections.

2. The high frequency optical pulse source as claimed in claim 1, wherein the gratings positioned inside both DFB sections are independently  
15 formed in a symmetrical way to each other, underlying and overlying the active layers, thereby allowing independent Bragg wavelength detuning.

3. The high frequency optical pulse source as claimed in claim 1, wherein the gratings positioned inside both DFB sections are independently  
20 formed on the same plane overlying or underlying the active layers, thereby allowing independent Bragg wavelength detuning.

4. The high frequency optical pulse source as claimed in claim 1, wherein the gratings positioned inside both DFB sections are formed by

holography or e-beams.

5. The high frequency optical pulse source as claimed in claim 1, wherein both DFB sections are formed by butt coupling or evanescent coupling.